REMARKS

Applicants acknowledge receipt of an Office Action dated March 2, 2004.

In this response Applicants have amended claims 2, 3, and 7-10. Support for these amendments may be found in the specification, *inter alia*, at page 7, lines 2-18.

In addition, Applicants have cancelled claim 6 without prejudice or disclaimer.

Following entry of these amendments, claims 2-5 and 7-18 are pending in the application.

Claims 11-18 have been provisionally withdrawn from consideration as being drawn to a non-elected embodiment.

Thus, claims 2-5 and 7-10 are currently pending and under consideration in the application.

Reconsideration of the present application is respectfully requested in view of the foregoing amendments and the remarks which follow.

Statement of Substance of Interview of June 10, 2004

As an initial matter, Applicants wish to thank Examiner Johnson for the courtesies extended to their representative, Mr. Paul D. Strain, during a personal interview conducted on June 10, 2004. During the interview, Mr. Strain and Examiner Johnson discussed the outstanding Office Action dated March 2, 2004 and the rejections set forth therein based upon U.S. Patent 5,849,254 to Suzuki *et al* (hereafter "Suzuki"). Mr. Strain and Examiner Johnson also discussed the amendments set forth above. Examiner Johnson indicated that the amendments set forth above would likely obviate the outstanding rejections based upon Suzuki but noted that the amendments may require further search and consideration and that

it may be necessary to file a Request for Continued Examination in order to have the amendments entered and fully considered.

Rejections Under 35 U.S.C. §103

On page 2 of the Office Action, the PTO has rejected claims 2, 4, 6 and 9 under 35 U.S.C. §103(c) as being unpatentable over U.S. Patent 5,849,254 to Suzuki et al. (hereafter "Suzuki"). In addition, on page 4 of the Office Action, the PTO has rejected claims 3, 5, 7-8 and 10 under 35 U.S.C. §103(a) as being unpatentable over Suzuki in view of U.S. Patent 5,376,610 to Takahata et al. (hereafter "Takahata").

In this response, Applicants have cancelled claim 6 and amended claims 2, 3, 7 and 8. In view of these amendments, Applicants respectfully traverse these rejections for the reasons set forth below.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 180 USPQ 580 (CCPA 1974). See MPEP §2143.03. Here, neither Suzuki nor Takahata, taken either individually or in combination, teach or properly suggest the configurations of catalyst layers set forth in amended independent claims 2, 3, 7 and 8.

With respect to claim 2, Applicants note that claim 2 recites that the catalytic component I containing Cu oxide and Zn oxide is mainly contained in a first catalyst and that the catalyst component II containing metal oxide and one of Pt and Pd is mainly contained in a second portion. According to amended claim 2, the second catalyst portion is "covering the first catalyst portion and being configured to contact the methanol gas and oxide containing gas earlier than the first catalyst." (Emphasis added). Therefore, the catalyst component I containing Cu oxide and Zn oxide is in a lower (*i.e.*, inner) layer, and the catalyst component II containing metal oxide and one of Pt and Pd is in an upper (*i.e.*, surface) layer. In this configuration, a gas mixture, including methanol and oxide, contacts the catalyst component II of the upper layer first. The catalyst component II accelerates a partial oxidation reaction and thus H_2 and CO are generated. Then, these reduction gases (*i.e.*, H_2, CO) contact the catalyst component I of the lower layer (*i.e.*, the first catalyst). The catalyst component I is activated as it is reduced by the reduction gases, and the activated component I accelerates a steam reforming reaction. Further, while the partial oxidation reaction generates heat, the

reforming reaction is an endothermic reaction. Therefore the heat generated by the partial oxidation reaction can apply to the reforming reaction. Accordingly the structure of claim 2 can induce a steam reforming reaction efficiency. See, for example, p. 6, line 27 - p. 7, line 7 of the present specification.

In contrast, Suzuki discloses an oxide of Fe, Co, Ni, Cu or Mn which is contained in the surface layer which is located on a NO_x absorber and noble metals. See column 3, lines 48 to 58. In Fig. 3 of Suzuki, the upper layer 6 contains Fe_2O_3 60 as a metal-oxide, and the lower layer 5 contains platinum 50. See column 9, line 11- 20.

Applicants note that the structure shown in Suzuki is the reverse of the presently claimed configuration. Therefore, Suzuki fails to teach or properly suggest the catalyst structure set forth in claim 2.

With regard to claim 3, a catalytic component I and a catalytic component II are dispersed and mixed in the catalyst portion. The catalyst component I contains copper oxide and zinc oxide, and the catalyst component II contains a metal oxide and one of platinum and palladium. As recited in amended claim 3, the catalyst portion has been "configured to contact the methanol gas and oxide containing gas". (Emphasis added)

As the PTO has noted, Suzuki fails to disclose that Cu, Zn, metal oxide, and one of Pt and Pd are dispersed and mixed together as set forth in claim 3. The PTO stated that the claimed invention would have been obvious, because Takahara allegedly teaches that Pt and/or Pd are effective catalytic components for an exhaust gas catalyst. Applicants note, however, that Takahara fails to teach mixing or dispersing the claimed catalyst components I and II in column 2.

When the catalytic component I and the catalytic component II are dispersed and mixed in the catalyst portion as recited in claim 3, a part of the catalyst component II contacts the mixed gas prior to the catalyst component I. As a result, the catalyst component II accelerates a partial oxidation reaction generating H_2 and CO. Then, these reduction gases (*i.e.*, H_2, CO) contact a part of the catalyst component I in the catalyst portion. Since the catalyst component I is reduced by the reduction gases, it has been activated. The activated catalyst component I accelerates a steam reforming reaction.

Applicants therefore submit that neither Suzuki nor Takahara, taken either individually or in combination, teach or fairly suggest a catalyst portion which has been "configured to contact the methanol gas and oxide containing gas" as recited in amended claim 3. Accordingly, Applicants submit that the subject matter of claim 3 would not have been obvious to a person skilled in the art.

In this response, Applicants have redrafted claims 7 and 8 in independent form. As set forth in amended claims 7 and 8, the "first , second and third layers are laminated in a vertical direction to a surface of the catalyst substrate."

Suzuki, taken either individually or together with Takahata, fails to teach or suggest a structure in which three catalyst layers are laminated in a vertical direction. Accordingly, Applicants submit that the presently claimed configuration is non-obvious in view of the cited references.

If an independent claim is nonobvious under §103, then any claim depending therefrom is nonobvious. *In re Fine*, 5 USPQ2d 1596 (Fed. Cir. 1988). See MPEP 2143.03. Thus, Applicants submit that claims 4-5 and 9-10, which ultimately depend from either claim 2 or claim 7, are also non-obvious.

In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of this rejection under §103.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully submit that all of the pending claims are now in condition for allowance. An early notice to this effect is earnestly solicited. If there are any questions regarding the application, the Examiner is invited to contact the undersigned at the number below.

Respectfully submitted,

Date 7/2/04

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The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 19-0741.